

IN THE CLAIMS:

Please cancel Claims 4 to 7, 9, 18, 26, 32 to 35, 37, 46, and 54 without prejudice to or disclaimer of the subject matter contained therein.

Please amend Claims 1, 3, 10 to 16, 19, 20 to 25, and 29, 31, 36, 38 to 45, 47 to 53, 55, and 57 to 58 as follows. All claims in the application are being reproduced below in accordance with current U.S. Patent and Trademark Office requirements.

1. (Currently Amended) An image processing method for executing an operation that causes a printing head, which is provided with a plurality of arranged printing elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the printing medium to be fed between the scans of the printing head, to print an image on the printing medium, said method comprising:

a first distributing step for, of first and second areas defines on the printing medium in relation to feeding said printing medium, distributing data for the dots to be formed on the same line of the first area by using mask patterns, among the plurality of scans; and

a second distributing step for distributing data for the dots to be formed on the same line of the second area, in which a deviation of dot forming location becomes larger than that in the first area, by using mask patterns, among the plurality of scans,

wherein division ratios of the mask patterns for the plurality times of scans, which are used for the first distributing step, are different from division rates of the mask patterns for the plurality times of scans, which are used for the second distributing step for a printing

~~apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs a plurality of times of scanning with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing;~~

~~wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of times of scanning is differentiated from the process relating to generation of dot forming data for the first area.~~

2. (Original) An image processing method as claimed in claim 1, wherein the first area is an area on the printing medium to which the printing head is capable of being used when the printing medium is fed by both an upstream roller and a down stream roller, both roller being provided for feeding the printing medium, and the second area is an area on the printing medium to which the printing head is capable of being used when the printing medium is fed by any one of the upstream roller and the down stream roller.

3. (Currently Amended) An image processing method for executing an operation that causes a printing head, which is provided with a plurality of arranged elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the

printing medium to be fed between the scan of the printing head, to print an image on the printing medium, said method comprising:

a distributing step for distributing the data for the dots to be formed on the same line on the printing medium by using mask patterns, among the plurality times of scans,

wherein division ratios of mask patterns are differentiated between a case that the printing medium is in a first location in which the printing medium is fed by both an upstream roller and a downstream roller, both rollers being provided for feeding the printing medium, and a case that the printing medium is in a second location in which the printing medium is fed by any one of the upstream roller and the downstream roller for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs a plurality of times of scanning with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing,

~~wherein a process relating to generation of dot forming data for printing in each of the plurality of times of scanning is differentiated in accordance with a location of the printing medium on a feeding path.~~

Claims 4 to 7 (Cancelled).

8. (Original) An image processing method as claimed in claim 7, wherein on the second area, printing is performed using a part of the plurality of printing elements in the

printing head so that feeding of the printing medium is executed at a smaller feeding amount than the feeding amount in the first area.

9. (Original) An image processing method as claimed in claim 7, wherein duty in the masking process for each of the plurality of times of scanning on the second area is differentiated from the duty for the first area.

10. (Currently Amended) An image processing method as claimed in claim 1 9, wherein the division ratios of the mask patterns used in the second distributing step are determined so that, of the plurality times of scans, for a scan ~~duty in the masking process for the second area is distributed to the plurality of times of scanning in a manner that to a scanning the longer time separated from a predetermined~~ scan scanning, the higher the division ratio is determined ~~duty is distributed.~~

11. (Currently Amended) An image processing method as claimed in claim 10, wherein the predetermined scan is a scan in which an accumulated error relating to feeding of the printing medium in the second area is maximum, and the distributing of data is performed for only the scan ~~a number of times of the plurality of times of the scanning is determined based on an in which the accumulated error relating to feeding accuracy, and the duty in the masking process is distributed to the scanning in which the accumulated error is smaller than a predetermined value.~~

12. (Currently Amended) An image processing method as claimed in claim 1 9, wherein a sum of the division ratios of the mask patterns used in the second distributing step is greater than 100% ~~the duty in the masking process forth second area is determined so that the duty for at least a predetermined scanning of the plurality of times of scanning is increased by adding noise.~~

13. (Currently Amended) An image processing method as claimed in claim 12, wherein noises are added to the mask patterns for making the sum of the division ratios of the mask patterns to be greater than 100% ~~the duty in the masking process for the second area is determined so that duty for the plurality of times of scanning is increased by adding noise based on weighting of the noise with respect to the predetermined scanning as a middle.~~

14. (Currently Amended) An image processing method for executing an operation that causes a printing head, which is provided with a plurality of arranged printing elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the printing medium to be fed between the scans of the printing head, to print an image on the printing medium, said method comprising:

a first distributing step for, of first and second areas defined on the printing medium in relation to feeding said printing medium, distributing data for the dots to be formed on the same line of the first area by using mask patterns, among the plurality of scans; and

a second distributing step for distributing data for the dots to be formed on the same line of the second area, in which a deviation of dot forming location becomes larger than that in the first area, by using mask patterns, among the plurality times of scans,

wherein the mask patterns used for the first distributing step are different from the mask patterns used for the second distributing step as claimed in claim 7, wherein the mask pattern used the masking process for each of the plurality of times of scanning on the second area is differentiated from the mask pattern for the first area.

15. (Currently Amended) An image processing method as claimed in claim 14, wherein the mask pattern used for the second distributing step ~~area~~ is a pattern for forming a plurality of dots continuously in a feeding direction in each of the plurality ~~of~~ times of scan ~~scanning~~.

16. (Currently Amended) An image processing method as claimed in claim 14, wherein the mask used ~~pattern~~ for the second distributing step ~~area~~ is a pattern for forming a plurality of dots continuously in a feeding and scanning direction ~~directions~~ in each of the plurality ~~of~~ times of scan ~~scanning~~.

17. (Original) An image processing method as claimed in claim 14, wherein the mask pattern for the second area is a pattern for forming a plurality of dots, locations of which area deviated randomly, in the plurality of times of scanning.

Claim 18 (Cancelled).

19. (Currently Amended) An image processing method as claimed in claim ~~1~~ 14, wherein a part of the plurality of printing elements in the printing head is used for printing on the second area so that ~~an~~ a feeding amount of the printing medium for the second area is set at  $1/N$  ( $N$  is an integer greater than or equal to 2) of the feeding amount for the first area.

20. (Currently Amended) An image processing method for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs a plurality of scanning with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing, wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of scanning is differentiated from the process relating to generation of dot forming data for the first area, the process relating to generation of dot forming data being ~~as claimed in claim 14, wherein the process relating to generation of dot forming data is~~ a process using an index pattern in accordance with density level of a pixel.

21. (Currently Amended) An image processing method for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs scanning a plurality of times with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing,

wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of scans is differentiated from the process relating to generation of dot forming data for the first area, the process relating to generation of dot forming data being as claimed in claim 14, wherein the process relating to generation of dot forming data is an error diffusion process.

22. (Currently Amended) An image processing method for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs a plurality of scans with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing,

wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of scans is differentiated from



the process relating to generation of dot forming data for the first area, the process relating to generation of dot forming data being as claimed in claim 14, wherein the process relating to generation of dot forming data is a dither process.

23. (Currently Amended) An image processing method as claimed in claim 14 7, wherein the printing head is capable of forming at least first color dots and second color dots, and the mask patterns used for the second distributing step are different between the first and second color ~~provided with the plurality of arranged printing elements for respective colors used for printing, and the masking process is differentiated between the respective colors.~~

24. (Currently Amended) An image processing method as claimed in claim 14 7, wherein the mask patterns used for the second distributing step are different depending on ~~the printing apparatus is capable of executing a plurality of printing modes and the masking process is differentiated between the plurality of printing modes.~~

25. (Currently Amended) An image processing method as claimed in claim 14 7, wherein the printing head is capable of forming two or more sizes of dots and the mask patterns used for the second distributing step are different ~~the masking process is differentiated in accordance with the size of dot formed.~~

Claim 26 (Cancelled).

27. (Original) An image processing method as claimed in claim 7, wherein each of the plurality of printing elements comprising an ejection port for ejecting ink and heating element for generating thermal energy used for ejecting the ink.

28. (Original) A control method for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs scanning with the printing head relatively to a printing medium so as to perform printing,

wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, feeding of the printing medium is executed at the same feeding amount as the first area, a range of printing elements used is changed by shifting the printing elements used without changing a number of printing elements which is a number of printing elements used for the first area, and printing is controlled to be performed with the changed printing elements.

29. (Currently Amended) An image processing apparatus for executing an operation that causes a printing head, which is provided with a plurality of arranged printing elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the printing medium to be fed between the scans of the printing head, to print an image on the printing medium, said apparatus comprising:

first distributing means for, of first and second areas defines on the printing medium in relation to feeding said printing medium, distributing data for the dots to be formed on the same line of the first area by using mask patterns, among the plurality of scans; and

second distributing means for distributing data for the dots to be formed on the same line of the second area, in which a deviation of dot forming location becomes larger than that in the first area, by using mask patterns, among the plurality of scans,

wherein division ratios of the mask patterns for the plurality of scans, which are used for said first distributing means, are different from division rates of the mask patterns for the plurality of scans, which are used for said second distributing means for performing an image processing so as to use a printing head provided with a plurality of arranged printing elements and to perform a plurality of times of scanning with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing;

wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of times of scanning is differentiated from the process relating to generation of dot forming data for the first area.

30. (Original) An image processing apparatus as claimed in claim 29, wherein the first area is an area on the printing medium to which the printing head is capable of

being used when the printing medium is fed by both an upstream roller and a down stream roller, both roller being provided for feeding the printing medium, and the second area is an area on the printing medium to which the printing head is capable of being used when the printing medium is fed by any one of the upstream roller and the down stream roller.

31. (Currently Amended) An image processing apparatus for executing an operation that causes a printing head, which is provided with a plurality of arranged elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the printing medium to be fed between the scan of the printing head, to print an image on the printing medium, said apparatus comprising:

distributing means for distributing the data for the dots to be formed on the same line on the printing medium by using mask patterns, among the plurality of scans,

wherein division ratios of mask patterns are differentiated between a case that the printing medium is in a first location in which the printing medium is fed by both an upstream roller and a downstream roller, both rollers being provided for feeding the printing medium, and a case that the printing medium is in a second location in which the printing medium is fed by any one of the upstream roller and the downstream roller ~~for performing an image processing so as to use a printing head provided with a plurality of arranged printing elements and to perform a plurality of times of scanning with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that~~

~~different printing elements are correspondingly used for a same scanning line to form dots for performing printing,~~

~~wherein a process relating to generation of dot forming data for printing in each of the plurality of times of scanning is differentiated in accordance with a location of the printing medium on a feeding path.~~

Claim 32 to 35 (Cancelled).

36. (Currently Amended) An image processing apparatus as claimed in claim 31 ~~35~~, wherein on the second area, printing is performed using a part of the plurality of printing elements in the printing head so that feeding of the printing medium is executed at a smaller feeding amount than the feeding amount in the first area.

Claim 37 (Cancelled).

38. (Currently Amended) An image processing apparatus as claimed in claim 29 ~~37~~, wherein the division ratios of the mask patterns used in said second distributing means are determined so that, of the plurality of scans, for a scan ~~duty in the masking process for the second area is distributed to the plurality of times of scanning in a manner that to a scanning~~ the longer time separated from a predetermined scan ~~scanning~~, the higher the division ratio is determined ~~duty is distributed~~.

39. (Currently Amended) An image processing apparatus as claimed in claim 38, wherein the predetermined scan is a scan in which an accumulated error relating to feeding of the printing medium in the second area is maximum, and the distributing of data is performed for only the scan ~~a number of times of the plurality of times of the scanning is determined based on an accumulated error relating to feeding accuracy, and the duty in the masking process is distributed to the scanning in which the~~ in which the accumulated error is smaller than a predetermined value.

40. (Currently Amended) An image processing apparatus as claimed in claim ~~29~~ 37, wherein a sum of the division ratios of the mask patterns used in said second distributing means is greater than 100% ~~the duty in the masking process for the second area is determined so that the duty for at least a predetermined scanning of the plurality of times of scanning is increased by adding noise.~~

41. (Currently Amended) An image processing apparatus as claimed in claim 40, wherein noises are added to the mask patterns for making the sum of the division ratios of the mask patterns to be greater than 100% ~~the duty in the masking process for the second area is determined so that duty for the plurality of times of scanning is increased by adding noise based on weighting of the noise with respect to the predetermined scanning as a middle.~~

42. (Currently Amended) An image processing apparatus for executing an operation that causes a printing head, which is provided with a plurality of arranged printing

elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the printing medium to be fed between the scans of the printing head, to print an image on the printing medium, said apparatus comprising:

first distributing means for, of first and second areas defined on the printing medium in relation to feeding said printing medium, distributing data for the dots to be formed on the same line of the first area by using mask patterns, among the plurality of scans; and

second distributing means for distributing data for the dots to be formed on the same line of the second area, in which a deviation of dot forming location becomes larger than that in the first area, by using mask patterns, among the plurality of scans,

wherein the mask patterns used for said first distributing means are different from the mask patterns used for the second distributing means as claimed in claim 35, wherein the mask pattern used the masking process for each of the plurality of times of scanning on the second area is differentiated from the mask pattern for the first area.

43. (Currently Amended) An image processing apparatus as claimed in claim 42, wherein the mask pattern used for the second distributing means ~~area~~ is a pattern for forming a plurality of dots continuously in a feeding and a scanning direction in each of the plurality ~~of times~~ of scans ~~scanning~~.

44. (Previously Presented) An image processing apparatus as claimed in claim 42, wherein the mask pattern for the second area is a pattern for forming a plurality of dots in a feeding and scanning directions in each of the plurality of times of scanning.

45. (Previously Presented) An image processing apparatus as claimed in claim 42, wherein the mask pattern for the second area is a pattern for forming a plurality of dots, locations of which are deviated randomly, in the plurality of times of scanning.

Claim 46 ( Cancelled).

47. (Currently Amended) An image processing apparatus as claimed in claim ~~29~~ 36, wherein a part of the plurality of printing elements in the printing head is used for printing on the second area so that ~~an~~ a feeding amount of the printing medium for the second area is set at  $1/N$  ( $N$  is an integer greater than or equal to 2) of the feeding amount of the first area.

48. (Currently Amended) An image processing apparatus for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs a plurality of scans with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing.



wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of scans is differentiated from the process relating to generation of dot forming data for the first area, the process relating to generation of dot forming data being as claimed in claim 35, wherein the process relating to generation of dot forming data is a process using an index pattern in accordance with density level of a pixel.

49. (Currently Amended) An image processing apparatus for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs scanning a plurality of times with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing,

wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of scans is differentiated from the process relating to generation of dot forming data for the first area, the process relating to generation of dot forming data being as claimed in claim 35, wherein the process relating to generation of dot forming data is an error diffusion process.

50. (Currently Amended) An image processing apparatus for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs scanning a plurality of times with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing,  
wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of scans is differentiated from the process relating to generation of dot forming data for the first area, the process relating to generation of dot forming data being as claimed in claim 35, wherein the process relating to generating of dot forming data is a dither process.

51. (Currently Amended) An image processing apparatus as claimed in claim ~~42~~ 35, wherein the printing head is capable of forming at least first color dots and second color dots, and the mask patterns used for said second distributing means are different between the first and second color ~~provided with the plurality of arranged printing elements for respective colors used for printing, and the masking process is differentiated between the respective colors.~~

52. (Currently Amended) An image processing apparatus as claimed in claim ~~42~~ 35, wherein the mask patterns used for said second distributing means are different

~~depending on the printing is capable of being executed at a plurality of printing modes and the masking process is differentiated between the plurality of printing modes.~~

53. (Currently Amended) An image processing apparatus as claimed in claim ~~42~~ 35, wherein the printing head is capable of forming two or more sizes of dots and the mask patterns used for said second distributing means are different ~~the masking process is differentiated~~ in accordance with the size of dot formed.

Claim 54 (Cancelled).

55. (Currently Amended) An image processing apparatus as claimed in claim ~~31~~ 35, wherein each of the plurality of printing elements comprising an ejection port for ejecting ink and heating element for generating thermal energy used for ejecting the ink.

56. (Original) A printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs scanning with the printing head relatively to a printing medium so as to perform printing,

wherein if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, feeding of the printing medium is executed at the same feeding amount as the first area, a range of printing elements used is changed by shifting the printing elements used without changing a number of printing

elements which is a number of printing elements used for the first area, and printing is controlled to be performed with the changed printing elements.

57. (Currently Amended) A storage medium in which a program is stored readably by a computer, the program being provided for causing the computer to execute an operation that causes a printing head, which is provided with a plurality of arranged printing elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the printing medium to be fed between the scans of the printing head, to print an image on the printing medium, said method comprising:

a first distributing step for, of a first and second areas defines on the printing medium in relation to feeding said printing medium, distributing data for the dots to be formed on the same line of the first area by using mask patterns, among the plurality of scans; and

a second distributing step for distributing data for the dots to be formed on the same line of the second area, in which a deviation of dot forming location becomes larger than that in the first area, by using mask patterns, among the plurality of scans,

wherein division ratios of the mask patterns for the plurality of scans, which are used for the first distributing step, are different from division rates of the mask patterns for the plurality of scans, which are used for the second distributing step ~~an image processing for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs a plurality of times of scanning with the printing head on a printing medium, between the plurality of times feeding of the printing medium being executed, so that~~

~~different printing elements are correspondingly used for a same scanning line to form dots for performing printing,~~

~~wherein said program comprising the step of executing an image processing in which, if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium, a process relating to generation of dot forming data for printing in each of the plurality of times of scanning is differentiated from the process relating to generation of dot forming data for the first area.~~

58. (Currently Amended) A program for causing a computer to execute an image processing for a printing apparatus, which uses a printing head, which is provided with a plurality of arranged elements, to scan a plurality of times on a same line on a printing medium so that different printing elements are used in the plurality of scans to form dots on the same line, and an operation that causes the printing medium to be fed between the scan of the printing head, to print an image on the printing medium, said method comprising:

a distributing step for distributing the data for the dots to be formed on the same line on the printing medium by using mask patterns, among the plurality of scans,

wherein division ratios of mask patterns are differentiated between a case that the printing medium is in a first location in which the printing medium is fed by both an upstream roller and a downstream roller, both rollers being provided for feeding the printing medium, and a case that the printing medium is in a second location in which the printing medium is fed by any one of the upstream roller and the downstream roller for causing a

computer to execute an image processing for a printing apparatus, which uses a printing head provided with a plurality of arranged printing elements and performs a plurality of times of scanning with the printing head on a printing medium, between the plurality of times of feeding of the printing medium being executed, so that different printing elements are correspondingly used for a same scanning line to form dots for performing printing;

wherein said program comprising the step of executing an image processing in which, if printing is performed on a second area in which a deviation of dot forming location becomes larger than that in a first area, the first and second areas being defined on the printing medium in relation to feeding said printing medium, a process relating to generation of dot forming data for printing in each of the plurality of times of scanning is differentiated from the process relating to generation of dot forming data for the first area.